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REISSUE PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reissue Application of: Davis et al.
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For: Combined Lithographic/Flexographic Printing Apparatus and Process
Examiner: Funk, Stephen

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Appeal
Brief
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Heather R. Huse

APPEAL BRIEF

Dear Sir:

REAL PARTY IN INTEREST

The real party in interest is Williamson Printing Corporation, 6700 Denton Drive, Dallas, Texas 75235-4497.

RELATED APPEALS OR INTERFERENCES

There are no related appeals or interferences.

STATUS OF THE CLAIMS

This is an appeal from the Final Action dated December 18, 2001. Claims 6-11, 15-38 and 42-151 stand rejected. Claims 1-5, 12-14 and 39-41 have been allowed.

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STATUS OF AMENDMENTS

No amendments are outstanding. Applicants submitted amendments to claims 9, 15, 21, 44-46, 52, 55, 57-58, 60, 64, 66, 72-78, 82, 85-87, 89, 91, 93-94, 96-97, 99-100, 102-103, 108-109, 113-121, 123-125, 130, 137, 141-142, 144 and 151 in the Reply and Amendment filed on September 14, 2001. In the Final Action, the Examiner stated that none of these submitted amendments are in compliance with 37 C.F.R. § 1.173(d). The amended claims have, however, been entered by the Examiner to advance prosecution.

SUMMARY OF THE INVENTION

The present invention provides for a continuous in-line printing process having a plurality of successive printing stations for printing color images on a substrate. At least one of the stations prints a liquid vehicle image on the substrate with an opaque coating using the flexographic process and at least one of the successive printing stations prints a second color image over the liquid vehicle image on the printed substrate using the lithographic process in the continuous in-line process.

In the novel inventive system, a single in-line continuous printing process is used. One of the stations may print a liquid vehicle image on a substrate that contains a slurry with an encapsulated essence therein utilizing the flexographic process. Another one of the stations may apply an overcoating over the liquid vehicle image on the printed substrate using a lithographic process. Still another of the stations may print an aqueous-based vehicle image including a suspended metallic material therein using the flexographic process to form a metallic coating and thereafter at least one of the successive printing stations prints a color image over the aqueous-based vehicle image using the lithographic offset process in the continuous in-line process.

Whenever a station is used for flexographic printing, a flexographic plate image is placed on the blanket cylinder for receiving the liquid vehicle and transferring the liquid vehicle to the impression cylinder for printing. An anilox roller is associated with the flexographic plate for supplying the liquid vehicle, which may be an aqueous-based vehicle.

In addition, in such case, a high-velocity air dryer is associated with the impression cylinder of one or more of the printing stations where the printing on the substrate is occurring to assist in drying the ink or liquid vehicle printed on the substrate while it is on or near the impression cylinder, before the substrate arrives at the next successive station for additional printing, or before printing occurs at the next successive station.

Thus, if a liquid vehicle such as white ink is to be printed, it is printed with a flexographic process which deposits a greater amount of ink on the substrate, the ink is dried with a high-velocity air dryer while the substrate is on or near the impression cylinder and prior to the substrate being received by the next successive station. If desired, at the next successive station the printing of the white ink liquid vehicle may again take place thus ensuring the desired intensity of whiteness on the substrate. Subsequently, at the next succeeding station a printing may take place on top of the white printing and such printing may continue at the remaining successive stations.

Thus, it is an object of the present invention to provide a plurality of successive printing stations for printing color images on a substrate in a continuous in-line process and in which some of the stations print using the flexographic process and other of the stations print utilizing the offset lithographic process.

It is also an object of the present invention to print an aqueous-based vehicle image including a suspended metallic material therein using the flexographic process at one printing

station and at least one successive printing station printing a color image over the aqueous-based vehicle image using a lithographic process in a continuous in-line process or placing an overcoating over the aqueous-based vehicle image using the flexographic process and then printing at successive stations using the lithographic process.

It is yet another object of the present invention to provide a continuous in-line printing process in which one of the stations prints a liquid vehicle image on the substrate with a slurry containing an encapsulated essence using the flexographic process and at least one of the successive printing stations applies an overcoating over the liquid vehicle image on the printed substrate using the offset lithographic process in a continuous in-line process.

ISSUES

1. Are claims 42-87, 94-96, 100-102, 109, 110, 112, 113, 125, 127-137, 139, and 141-151 properly rejected under 35 U.S.C. § 251 as being based upon new matter added to the patent for which reissue is sought?

2. Are claims 42-87, 94-96, 100-102, 109, 110, 112, 113, 125, 127-137, 139, and 141-151 properly rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention?

3. Are claims 6-8, 38, and 49-51 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland (G 93 05 552.8) in view of Pantone and Offsetpraxis?

4. Are claims 9 and 52 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Pantone and Offsetpraxis as applied to claims 6-8, 38, and 49-51, and further in view of Bird (US 4,841,903)?

5. Are claims 42 and 43 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Pantone and Offsetpraxis as applied to claims 6-8, 38, and 49-51, and further in view of Schone et al. (US 4,188,883)?

6. Are claims 10, 29, and 31-33 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Satterwhite (US 4,308,796)?

7. Are claims 11, 30, and 60-66 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Satterwhite as applied to claims 10, 29, and 31-33, and further in view of Bird ('903)?

8. Is claim 67 properly rejected under 35 U.S.C. 103(a) as being unpatentable over MAN Roland in view of Satterwhite and Bird as applied to claims 11, 30, and 60-66, and further in view of Schumacher et al. (US 5,079,044)?

9. Are claims 68-71 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Satterwhite and Bird as applied to claims 11, 30, and 60-66, and further in view of Pantone and Offsetpraxis?

10. Are claims 34-36 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Satterwhite as applied to claims 10, 29, and 31-33, and further in view of Schumacher et al. (US 5,079,044)?

11. Are claims 42, 43, and 53 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Satterwhite as applied to claims 10, 29, and 31-33, and further in view of Schone et al.?

12. Is claim 54 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Satterwhite and Schone et al. as applied to claims 42, 43, and 53, and further in view of Bird?

13. Are claims 15-23, 37, 44-48, 55, 88-93, 97-99, 103-108, 114-118, 124, 126-130, 138, and 140-144 properly rejected under 35 U.S.C. 103(a) as being unpatentable over MAN Roland in view of Bird ('903)?

14. Is claim 24 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Bird as applied to claims 15-23, 37, 44-48, 55, 88 - 93, 97-99, 103-108, 114-118, 124, 126-130, 138, and 140-144, and further in view of Schumacher et al.?

15. Are claims 25-28, 131-134, and 145-148 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Bird as applied to claims 15-23, 37, 44-48, 55, 88-93, 97-99, 103-108, 114-118, 124, 126-130, 138, and 140-144, and further in view of Pantone and Offsetpraxis?

16. Are claims 56, 57, 135, 136, 149, and 150 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Bird as applied to claims 15-23, 37, 44-48, 55, 88 - 93, 97-99, 103-108, 114-118, 124, 126-130, 138, and 140-144, and further in view of Roulleau (US 4,109,572)?

17. Are claims 137 and 151 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Bird and Roulleau as applied to claims 56, 57, 135, 136, 149, and 150, and further in view of Schumacher et al.?

18. Are claims 42, 43, 80, 81, 94-96, 100-102, 109-113, 119-123, 125, 127-130, 139, and 141-144 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Bird and Schone et al.?

19. Are claims 131-134 and 145-148 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Bird and Schone et al. as applied to claims 42,

43, 80, 81, 94-96, 100-102, 109-113, 119-123, 125, 127-130, 139, and 141-144, and further in view of Pantone and Offsetpraxis?

20. Are claims 135, 136, 149, and 150 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Bird and Schone et al. as applied to the claims 42, 43, 80, 81, 94-96, 100-102, 109-113, 119-123, 125, 127-130, 139, and 141-144, and further in view of Roulleau?

21. Are claims 137 and 151 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Bird, Schone et al., and Roulleau as applied to claims 135, 136, 149, and 150, and further in view of Schumacher et al.?

22. Are claims 72, 74, 76, 86, and 87 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Schone et al.?

23. Is claim 73 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Schone et al. as applied to claims 72, 74, 76, 86, and 87, and further in view of Bird?

24. Are claims 77-79 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over MAN Roland in view of Schone et al. as applied to claims 72, 74, 76, 86, and 87, and further in view of Schumacher et al.?

25. Are claims 6, 10, 29, 31, 38, 44-46, and 49 properly rejected under 35 U.S.C. § 102(e) as being anticipated by Hartung et al. (US 5,638,752)?

26. Are claims 6, 10, 29, 31, 38, 44-46, and 49 properly rejected under 35 U.S.C. § 102(a) as being anticipated by Hartung et al. (EP 620,115)?

27. Are claims 7, 8, 32, 33, 47, 48, 50, and 51 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Hartung et al. ('752) or ('115)?

28. Are claims 9, 11, 15-23, 25-28, 30, 37, 52, 55-57, 60-66, 68-71, 88-90, 91-93, 97-99, 103-108, 114-118, 124, 126-134, 138, and 140-148 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Hartung et al. ('752) or ('115) in view of Bird?

29. Are claims 53, 72, 74-76, 81, and 85-87 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Hartung et al. ('752) or ('115) in view of Schone et al.?

30. Are claims 54, 73, 80, 94-96, 100-102, 109-113, 119-123, 125, 127-134, 139, and 142-148 properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Hartung et al. ('752) or ('115) in view of Bird and Schone et al.?

31. Are claims 6, 10, 29, 31, 38, 44-46, and 49 properly rejected under 35 U.S.C. § 102(b) as being anticipated by MAN Roland?

ARGUMENTS

Claims 42-87, 94-96, 100-102, 109, 110, 112, 113, 125, 127-137, 139, and 141-151 have been rejected under 35 U.S.C. § 251 as being based upon new matter. Claims 42-87, 94-96, 100-102, 109, 110, 112, 113, 125, 127-137, 139, and 141-151 have been rejected under 35 U.S.C. § 112, first paragraph as containing subject matter not described in the specification. Claims 91-123 are objected to under 37 C.F.R. § 1.75(a) as being indefinite for failing to point out and distinctly claim the subject matter that applicant regards as the invention. Claims 6-11, 15-38, 42-57, 60-77, 79-81, and 85-151 have been rejected under 35 U.S.C. § 103(a). Claims 6, 10, 29, 31, 38, 44-46, and 49 have been rejected under 35 U.S.C. § 102.

Declaration of the MAN Roland and Hartung Inventors

Georg Hartung, Ulrich Jung, and Jurgen Schneider, are the co-inventors of the inventions described in the following references, which were cited by the Examiner: German Gebrauchsmuster G 93 05 552.8 (U1) (the "MAN Roland" reference), EP 620,115 and U.S.

Patent No. 5,638,752 (the "Hartung" references). The Examiner cites MAN Roland as the primary § 103 reference for rejecting applicants' reissue claims. The Examiner has also rejected applicants' claims under § 102 in light of the Hartung references. Applicants have attached a copy of the declaration of these co-inventors, which was submitted to the Examiner in a response to the office action mailed on April 17, 2001. The declaration establishes that the inventors had at the time the invention of U.S. Patent No. 5,630,363 was made, and presently have, ordinary skill in the art pertaining to the subject matter of the invention.

Rejections Under 35 U.S.C. § 251 and 35 U.S.C. § 112, first paragraph

35 U.S.C. § 251 states, in part, that "[N]o new matter shall be introduced into the application for reissue." "New matter" is characterized as matter that departs from or adds to the original disclosure. *Stearn v. Superior Distributing Co.*, 674 F.2d 539, 544 (6th Cir. 1982). Matter is not new matter if it is inherently disclosed in the original disclosure of the application. *Id.* The test for inherency is whether a person of ordinary skill in the art would recognize "that the missing descriptive matter is necessarily present in the thing described in the reference." *In re Robertson*, 169 F.3d 743, 745 (C.A.F.C. 1999).

Additionally, 35 U.S.C. § 112, first paragraph states that:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms ***as to enable any person skilled in the art*** to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention. (emphasis added).

The proper test is whether the original specification "convey[s] with reasonable clarity to those of ordinary skill" that the inventor had in fact invented the claimed subject matter. *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1566 (C.A.F.C. 1991).

Claims 42-87, 94-96, 100-102, 109, 110, 112, 113, 125, 127-137, 139, and 141-151 have been rejected as being directed to new matter and as containing subject matter not described in the specification. These claims are, in part, directed to printing on both sides of a substrate in a single-pass printing process, which is known as perfector printing. Georg Hartung, Ulrich Jung, and Jurgen Schneider, inventors of the MAN Roland and Hartung references, all had, at the time the invention of this application was made, and presently have, ordinary skill in the art pertaining to the subject matter of the invention. Georg Hartung, Ulrich Jung, and Jurgen Schneider have declared under oath that they believe that the disclosure reasonably conveys to one skilled in the relevant art that the Applicants had possession of the claimed invention as it relates to perfector printing. Furthermore, they declared that they believe that disclosure of a continuous in-line process necessarily implies perfector printing.

Because of the declarations of Hartung, Jung and Schnieder, Applicants respectfully submit that the subject matter of claims 42-87, 94, 95, 100-102, 109, 110, 112, 113, 119-124, 125, 127-137, 139, and 141-151 is inherently described in the application and not directed to new matter and that these claims will enable a person skilled in the art of printing to make and use the claimed invention. Consequently, Applicants respectfully submit that rejections of theses claims under 35 U.S.C. § 251 and 35 U.S.C. § 112, first paragraph, are erroneous. Accordingly, Applicants respectfully request that the Board reverse the decision of the Examiner to reject claims 42-87, 94, 95, 100-102, 109, 110, 112, 113, 119-124, 125, 127-137, 139, and 141-151 under 35 U.S.C. § 251 and 35 U.S.C. § 112, first paragraph.

Rejections Under 35 U.S.C. § 102 and § 103

The Manual of Patent Examining Procedure (MPEP) establishes guidelines for an Examiner to determine whether a claimed invention is obvious to a person of ordinary skill in

light of prior art references. First, the Examiner is advised to ascertain the level of ordinary skill.

MPEP § 2141.03 states, in part:

"The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry." *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718, 21 USPQ2d 1053, 1057 (Fed. Cir. 1991). The examiner must ascertain what would have been obvious to one of ordinary skill in the art at the time the invention was made, and not to the inventor, a judge, a layman, those skilled in remote arts, or to geniuses in the art at hand. *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 218 USPQ 865 (Fed. Cir. 1983), cert. denied, 464 U.S. 1043 (1984). . . . To reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person.

In this particular case, Georg Hartung, Ulrich Jung, and Jurgen Schneider, inventors of the MAN Roland and Hartung references, had at the time of Applicants' invention, and presently have, ordinary skill in the art. As specifically stated below with reference to each obviousness rejection, these persons of ordinary skill have declared that Applicants' invention is not obvious in light of the references cited by the Examiner.

Further, the MPEP cites *In re Vaeck* to instruct an Examiner how to establish a prima facie case of obviousness.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Again, the declaration of Georg Hartung, Ulrich Jung, and Jurgen Schneider, all persons of ordinary skill in the art, have declared that Applicants' invention would not have been obvious

and, further, that nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner. As will be described in greater detail below, the declaration specifically addresses each of the Examiner's obviousness rejections.

With respect to the rejections under 35 U.S.C. §102, a cited reference must teach each and every element of the rejected claim.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). MPEP 2131.

As indicated below, Georg Hartung, Ulrich Jung, and Jurgen Schneider, who are **the inventors** of the § 102 references cited by the Examiner, have declared that their patents do not teach the Applicants' invention.

Claims 6-11, 15-38, 42-57, 60-77, 79-81, and 85-151 have been rejected under 35 U.S.C. § 103(a). Claims 6, 10, 29, 31, 38, 44-46, and 49 have been rejected under 35 U.S.C. § 102. The Applicants respectfully submit that the declaration of Georg Hartung, Ulrich Jung, and Jurgen Schneider overcomes these rejections. The attached declaration is incorporated by reference for each of the remarks, which are specifically presented below, regarding the Examiner's rejections of claims under 35 U.S.C. § 102 and § 103.

With respect to Claims 6-8, 38, and 49-51, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to utilize the apparatus and method of MAN Roland to print aqueous based metallic inks in view of Pantone and Offsetpraxis to achieve a superior metallic image. With respect to the dependent claims it would not have been obvious to one of ordinary skill in the art through

routine experimentation to use either uniform or non-uniform sized metal particles to achieve the desired metallic effect. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 9 and 52, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the apparatus and method of MAN Roland, as modified by Pantone and Offsetpraxis, with a plate cylinder mounted flexographic plate and blanket cylinder in view of Bird so as to selectively utilize the unit as a flexographic or lithographic unit. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 42 and 43, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the apparatus and method of MAN Roland, as modified by Pantone and Offsetpraxis, with perfector printing in view of Schone et al. so as to print both sides of the substrate in one pass. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 10, 29, and 31-33, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the apparatus and process disclosed by MAN Roland with the capability of printing a flexographic image in view of Satterwhite to achieve the benefits of printing with a flexographic unit. Furthermore, nothing in the cited references teaches, suggests or motivates

one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 11, 30 and 60-66, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the apparatus and method of MAN Roland, as modified by Satterwhite, with a plate cylinder mounted flexographic plate and blanket cylinder in view of Bird so as to selectively utilize the unit as a flexographic or lithographic unit. Additionally, it would not have been obvious to one of ordinary skill in the art to provide the apparatus and method of MAN Roland, as modified by Satterwhite, with interstation dryers in view of Bird so as to dry images before subsequent printing and/or coating. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claim 67, the Examiner's rejection is erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the method of MAN Roland, as modified by Satterwhite and Bird, with the step of printing an encapsulated essence in view of Schumacher et al. to apply a sufficiently heavy coating. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 68-71, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to utilize the apparatus and method of MAN Roland, as modified by Satterwhite and Bird, to print aqueous based metallic inks in view of Pantone and Offsetpraxis to achieve a superior metallic image.

Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 34-36, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the method of MAN Roland, as modified by Satterwhite, with the step of printing an encapsulated essence in view of Schumacher et al. to apply a sufficiently heavy coating. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 42, 43, and 53, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the apparatus and method of MAN Roland, as modified by Satterwhite, with perfecter printing in view of Schone et al. so as to print both sides of the substrate in one pass. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claim 54, the Examiner's rejection is erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the apparatus and method of MAN Roland, as modified by Satterwhite and Schone et al., with a plate cylinder mounted flexographic plate and blanket cylinder in view of Bird to so as to selectively utilize the unit as a flexographic or lithographic unit. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 15-23, 37, 44-48, 55, 88-93, 97-99, 103-108, 114-118, 124, 126-130, 138, and 140-144, the Examiner's rejections are erroneous because persons of ordinary skill

in the art have declared under oath that it would not have been obvious to provide the apparatus and method of MAN Roland with a plate cylinder mounted flexographic plate and blanket cylinder in view of Bird to so as to selectively utilize the unit as a flexographic or lithographic unit. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claim 24, the Examiner's rejection is erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the method of MAN Roland, as modified by Bird, with the step of printing an encapsulated essence in view of Schumacher et al. to apply a sufficiently heavy coating. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 25-28, 131-134, and 145-148, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to utilize the apparatus and method of MAN Roland, as modified by Bird, to print aqueous based metallic inks in view of Pantone and Offsetpraxis to achieve a superior metallic image. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 56, 57, 135, 136, 149, and 150, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the apparatus and method of MAN Roland, as modified by Bird, with the step of printing with an opaque white ink of Roulleau so as to provide sufficient contrast for subsequently printed colors. Furthermore, nothing in the cited references teaches, suggests or

motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 137 and 151, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the method of MAN Roland, as modified by Bird and Roulleau, with the step of printing an encapsulated essence in view of Schumacher et al. to apply a sufficiently heavy coating. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 42, 43, 80, 81, 94-96, 100-102, 109-113, 119-123, 125, 127-130, 139, and 141-144, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the apparatus and method of MAN Roland, as modified by Bird, with perfect printing in view of Schone et al. so as to print both sides of the substrate in one pass. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 131-134 and 145-148, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to utilize the apparatus and method of MAN Roland, as modified by Bird and Schone, et al., to print aqueous based metallic inks in view of Pantone and Offsetpraxis to achieve a superior metallic image. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 135, 136, 149, and 150, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been

obvious to provide the apparatus and method of MAN Roland, as modified by Bird and Schone et al., with the step of printing with an opaque white ink of Roulleau so as to provide sufficient contrast for subsequently printed colors. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 137 and 151, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the method of MAN Roland, as modified by Bird, Schone, et al., and Roulleau, with the step of printing an encapsulated essence in view of Schumacher et al. to apply a sufficiently heavy coating. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 72, 74, 76, 86, and 87, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the apparatus and method of MAN Roland with perfecting printing in view of Schone et al. so as to print both sides of the substrate in one pass. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claim 73, the Examiner's rejection is erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the apparatus and method of MAN Roland, as modified by Schone et al., with a plate cylinder mounted flexographic plate and blanket cylinder in view of Bird so as to selectively utilize the unit as a flexographic or lithographic unit. Furthermore, nothing in the cited references teaches,

suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 77 and 79, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the method of MAN Roland, as modified by Schone, et al., with the step of printing an encapsulated essence in view of Schumacher et al. to apply a sufficiently heavy coating. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 6, 10, 29, 31, 38, 44-46, and 49, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that Hartung et al. (U.S. 5,638,752) does not teach the apparatus and method as recited.

With respect to Claims 6, 10, 29, 31, 38, 44-46, and 49, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that Hartung et al. (EP 620,115) does not teach the apparatus and method as recited.

With respect to Claims 7, 8, 32, 33, 47, 48, 50 and 51, the Examiner's rejections are erroneous because each of the recited sizes of particles, ink types, or substrate types would not have been obvious to one of ordinary skill in the art through routine experimentation and were not conventional in the art. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 9, 11, 15-23, 25-28, 30, 37, 52, 55-57, 60-66, 68-71, 88-90, 91-93, 97-99, 103-108, 114-118, 124, 126-134, 138, and 140-148, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not

have been obvious to provide the apparatus and method of Hartung et al. ('752) or ('115) with a plate cylinder mounted flexographic plate and blanket cylinder in view of Bird so as to selectively utilize the unit as a flexographic or lithographic unit. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 53, 72, 74-76, 81, and 85-87, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the apparatus and method of Hartung et al. ('752) or ('115) with perfecter printing in view of Schone et al. so as to print both sides of the substrate in one pass. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 54, 73, 80, 94-96, 100-102, 109-113, 119-123, 125, 127-134, 139 and 142-148, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that it would not have been obvious to provide the apparatus and method of Hartung et al. ('752) or ('115) with a plate cylinder mounted flexographic plate and blanket cylinder in view of Bird so as to selectively utilize the unit as a flexographic or lithographic unit and with perfecter printing in view of Schone et al. so as to print both sides of the substrate in one pass. Furthermore, nothing in the cited references teaches, suggests or motivates one of ordinary skill in the art to combine the references in the manner described by the Examiner.

With respect to Claims 6, 10, 29, 31, 38, 44-46, and 49, the Examiner's rejections are erroneous because persons of ordinary skill in the art have declared under oath that MAN Roland does not teach the apparatus and method as recited.

Therefore, Applicants respectfully submit that the declaration of Georg Hartung, Ulrich Jung, and Jurgen Schneider overcomes the rejection of claims 6-11, 15-38, 42-57, 60-77, 79-81, and 85-151 under 35 U.S.C. § 103(a) and 35 U.S.C. § 102. Accordingly, Applicants respectfully request that the Board reverse the Examiner's rejections of claims 6-11, 15-38, 42-57, 60-77, 79-81, and 85-151 under 35 U.S.C. § 103(a) and 35 U.S.C. § 102.

Objections Under 37 C.F.R. § 1.75(a)

Claims 91-123 are objected to under 37 C.F.R. § 1.75(a) as being indefinite for failing to point out and distinctly claim the subject matter that applicant regards as the invention. Specifically, the Examiner has stated that it is not clear how the flexographic plate on the blanket cylinder receives a flexographic image from the anilox roller, as there is no image on the anilox roller. Applicants have amended claims 91-123 to clarify the claims in light of the Examiner's objections and respectfully request that the objections to these claims be reversed.

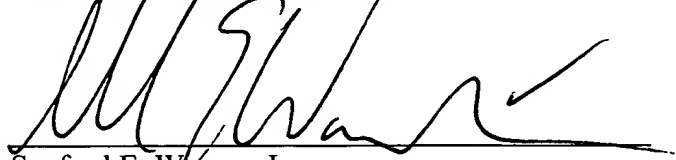
The Examiner also noted that the disclosure does not provide support for the terminology "thin controlled layers" as recited in claim 82. Claim 82 has been amended to recite "series of images," which is supported by the specification, in place of "thin controlled layers." Applicants, therefore, respectfully request that the objection to claim 82 be reversed.

CONCLUSION

In light of the arguments stated above, Applicants respectfully submit that the Examiner's rejections of claims 6-11, 15-38, and 42-151 are erroneous. As such, Applicants respectfully request that the Board reverse the Examiner's rejections of claims 6-11, 15-38, and 42-151.

Respectfully submitted,

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APPENDIX

6. Apparatus for a combined lithographic/flexographic printing process comprising:
a plurality of successive printing stations for printing color images on a substrate in a continuous in-line process;
one of said stations comprising a flexographic printing station printing an aqueous-based vehicle image using the flexographic process to form a metallic coating;
a suspended metallic material being included in said aqueous-based vehicle image; and
at least one of the successive printing stations comprising an offset lithographic printing station printing a color image over the aqueous-based vehicle image using the offset lithographic process in said continuous in-line process.

7. Apparatus as in claim 6 wherein said suspended material includes uniform-sized metal particles to form said metallic coating.

8. Apparatus as in claim 6 wherein said suspended material includes nonuniform-sized metal particles to form said metallic coating.

9. (Amended) Apparatus as in claim 6 further including: said flexographic printing station including a plate cylinder having a flexographic plate thereon, a blanket cylinder, and an impression cylinder;
a flexographic plate image transferred from said plate cylinder to said blanket cylinder, said image being formed of said metallic coating, said impression cylinder in ink-transfer relationship with said blanket cylinder, said blanket cylinder transferring said metallic coating to said substrate for printing said flexographic plate image on said substrate; and

an anilox roller associated with said flexographic plate for supplying said aqueous-based vehicle containing said suspended metallic material to said flexographic plate.

10. Apparatus for creating a combined lithographic/flexographic printing process comprising: a plurality of successive printing stations for printing color images on a substrate in a continuous in-line process;

one of said stations comprising a flexographic printing station for printing a first color image using the flexographic process; and

at least one of the successive printing stations comprising an offset lithographic printing station for printing a second color image over the first color image using the offset lithographic process in said continuous in-line process.

11. Apparatus as in claim 10 further including:

said flexographic printing station including a plate cylinder, a blanket cylinder, and an impression cylinder;

a flexographic plate on said plate cylinder;

an anilox roller associated with said flexographic plate for supplying a first color to said flexographic plate to form said first color image; and

said blanket cylinder receiving said first color image from said plate cylinder and transferring said first color image to said impression cylinder for printing on said substrate.

15. (Amended) Apparatus for a combined lithographic/flexographic printing process comprising: a plurality of successive printing stations for printing color images on a substrate in a continuous in-line process;

said printing stations including both lithographic and flexographic printing stations;

a blanket cylinder at at least a first one of said flexographic printing stations;
an impression cylinder associated with at least said first one of said flexographic printing
stations;
flexographic ink-providing means at said at least first one of said flexographic printing stations
for applying a flexographic ink to said blanket cylinder to form an image;
a substrate for receiving said flexographic ink image transferred from said blanket cylinder; and
at least one subsequent lithographic printing station in said in-line process for receiving said
image printed substrate and printing an additional colored ink image on said substrate on top of
said flexographic ink image using offset lithography.

15. Apparatus for a combined lithographic/flexographic printing process comprising:

a plurality of successive printing stations for printing color images on a substrate in a continuous
in-line process, said printing stations including both lithographic and flexographic printing
stations;

a blanket cylinder at at least a first one of said flexographic printing stations;

flexographic ink-providing means at said at least first one of said flexographic printing stations
for applying a flexographic ink to said blanket cylinder to form an image;

a substrate for receiving said flexographic ink image transferred from said blanket cylinder; and

at least one subsequent lithographic printing station in said in-line process for receiving said image printed substrate and printing an additional colored ink image on said substrate on top of said flexographic ink image using offset lithography.

16. Apparatus as in claim 15 further comprising:

a plate cylinder at said at least first one of said flexographic stations;

a flexographic plate on said plate cylinder for receiving and transferring said flexographic ink to said blanket cylinder; and

said flexographic ink-providing means including a flexographic ink supply and an anilox roller associated with said flexographic ink supply for transferring said flexographic ink to said flexographic plate.

17. Apparatus for a combined lithographic/flexographic printing process for printing a multicolored image comprising:

a plurality of successive printing stations for printing color on a substrate in a continuous in-line process, said printing stations including both lithographic and flexographic printing stations;

at least one of said flexographic printing stations having:

(1) a plate cylinder and a blanket cylinder, said plate cylinder including a flexographic plate having an image thereon for transferring a flexographic color ink image to said blanket cylinder;

(2) an etched anilox roller for applying a flexographic color ink to said flexographic plate on said plate cylinder;

(3) an impression cylinder in ink-transfer relationship with said blanket cylinder for transferring said flexographic color ink image from said blanket cylinder to said substrate; and

at least one of said succeeding printing stations being a lithographic printing station using offset lithography for printing additional colored ink images on top of said flexographic ink image.

18. Apparatus as in claim 17 wherein said additional colored ink images are formed with lithographic inks.

19. Apparatus as in claim 17 wherein said colored ink images are formed with waterless inks.

20. Apparatus as in claim 17 further including an air dryer adjacent to said impression cylinder for drying the flexographic ink image transferred to said substrate before said additional colored ink images are printed thereon.

21. (Amended) Apparatus as in claim 17 further including halftone printing plates for printing said additional colored ink images.

22. Apparatus as in claim 17 wherein said flexographic ink image and said colored ink images are printed as solid colors and/or with halftone printing plates in sequence and in registry in said successive printing stations to produce said multicolored image on said substrate.

23. Apparatus as in claim 17 wherein said printing apparatus includes a sheet-fed press.

24. Apparatus as in claim 17 wherein at least one of said flexographic printing stations prints said flexographic ink image with liquid vehicle slurry containing an encapsulated essence.

25. Apparatus as in claim 17 wherein at least one of said printing stations prints said flexographic ink image with a water-based liquid vehicle containing suspended particles.

26. Apparatus as in claim 25 wherein said suspended particles are uniform in size.

27. Apparatus as in claim 25 wherein said suspended particles are nonuniform in size.

28. Apparatus as in claim 25 wherein said suspended particles are metallic particles.

29. A method of combining lithography and flexographic printing in a continuous in-line process comprising the steps of:

providing a plurality of successive lithographic/flexographic printing stations for printing colored ink images on a substrate;

printing a flexographic ink image on said substrate at at least one of said flexographic stations;
transferring said printed substrate to at least one subsequent printing station in said continuous in-line process; and
printing colored ink images on top of said flexographic ink image at at least one of said subsequent lithographic printing stations with an offset lithographic process.

30. A method as in claim 29 further comprising the step of drying said flexographic ink image on said substrate with an air dryer prior to printing said colored ink images thereon.

31. A method as in claim 29 further including the step of printing a coating on top of said colored ink images at one of said plurality of subsequent printing stations.

32. A method as in claim 29 wherein said colored inks forming said colored ink images are waterless.

33. A method as in claim 29 wherein said colored inks forming said colored ink images are in a solvent-based liquid vehicle.

34. A method as in claim 29 further including the steps of:

printing a slurry on said substrate at any of said printing stations in said continuous in-line process;
using an encapsulated essence in said slurry; and

printing an overcoating over said slurry at a subsequent printing station in said in-line process to protect said essence.

35. A method as in claim 34 further including the step of printing an aqueous-based coating over said slurry.

36. A method as in claim 34 further including the step of printing an ultraviolet coating over said slurry.

37. A method of combining offset lithography and flexographic printing in a continuous in-line process comprising the steps of:

providing a substrate;

applying a flexographic ink to a blanket cylinder in a pattern with a coating head at a first flexographic printing station;

transferring said pattern of flexographic ink from said blanket cylinder to the substrate; and

printing a waterless ink pattern over said flexographic ink pattern on said substrate at at least one subsequent offset lithographic printing station in said continuous in-line process.

38. A method of combining lithography and flexographic printing in a continuous in-line process comprising the steps of:

printing an aqueous-based vehicle image having suspended particles therein on a substrate at a first flexographic printing station;

transferring said image printed substrate to at least one additional printing station in said continuous in-line process; and
printing additional colored ink images on said printed substrate over said aqueous-based vehicle image in an offset lithographic process at said at least one additional printing station in said in-line process.

42. The apparatus of any of claims 1, 6, 10, 12, 15 and 17, wherein the substrate is printed on both sides in one pass during the continuous in-line process.

43. The method of any of claims 29, 37, 38 or 39 wherein the substrate is printed on both sides in one pass during, the continuous in-line process.

44. (Twice Amended) Apparatus for a combined lithographic/flexographic printing process comprising:

a substrate;

a plurality of successive printing stations for depositing a series of images on one side of a substrate in a continuous in-line process;

one of said stations comprising a flexographic printing station for printing a liquid vehicle image on said substrate using a flexographic process; and

at least one of said successive printing stations being a lithographic printing station;

whereby said substrate is printed on top of or on the opposite side of that previously printed at said at least one [of said] successive lithographic printing stations using the lithographic process in said continuous in-line process.

45. (Twice Amended) Apparatus as in claim 44 wherein at least one image of said series of images at the flexographic printing station is a coating material.

46. (Twice Amended) Apparatus as in claim 44 wherein at least one image of said series of images at said at least one of the lithographic printing stations is an ink.

47. Apparatus as in claim 44 wherein:

said substrate is a paper sheet; and

said apparatus includes a sheet feeder.

48. Apparatus as in claim 44 wherein:

said substrate is a web; and

said apparatus includes a web feeder.

49. An apparatus for a combined lithographic/flexographic printing process comprising:

a plurality of successive printing stations for depositing a series of images on a substrate in a continuous in-line process;

one of said stations comprising a flexographic printing station printing an aqueous-based vehicle

on one side of the substrate using the flexographic process to form a metallic coating image;

a suspended metallic material being included in said aqueous-based vehicle; and

at least one of the successive printing stations comprising an offset lithographic printing station printing a color image on top of the aqueous-based vehicle or on the opposite side to that previously printed using the offset lithographic process in said continuous in-line process.

50. Apparatus for creating a combined lithographic/ flexographic printing process comprising: a plurality of successive printing stations for depositing a series of images on a substrate in a continuous in-line process;

one of said stations comprising a flexographic printing station for printing a first color image using the flexographic process; and

at least one of the other successive printing stations comprising an offset lithographic printing station for printing a second color image on the reverse side of the substrate of the first color image using the offset lithographic process in said continuous in-line process.

51. Apparatus as in claim 49 wherein said suspended material includes nonuniform-sized metal particles to form said metallic coating.

52. (Amended) Apparatus as in claim 49 further including: said flexographic printing station including a plate cylinder having a flexographic plate thereon, a blanket cylinder, and an impression cylinder;
a flexographic plate image transferred from said plate cylinder to said blanket cylinder, said image being formed of said metallic coating, said impression cylinder in ink-transfer relationship with said blanket cylinder, said blanket cylinder transferring said metallic coating to said [impression cylinder] substrate for printing said flexographic plate image on said substrate; and

an anilox roller associated with said flexographic plate for supplying said aqueous-based vehicle containing said suspended metallic material to said flexographic plate.

53. Apparatus for creating a combined lithographic/ flexographic printing process comprising:
a plurality of successive printing stations for depositing a series of images on a substrate in a
continuous in-line process;

one of said stations comprising a flexographic printing station for printing a first color image
using the flexographic process; and

at least one of the other successive printing stations comprising an offset lithographic printing
station for printing a second color image on the reverse side of the substrate of the first color
image using the offset lithographic process in said continuous in-line process.

54. Apparatus as in claim 53 further including:

said flexographic printing station including a plate cylinder, a blanket cylinder, and an
impression cylinder;

a flexographic plate on said plate cylinder;

an anilox roller associated with said flexographic plate for supplying a first color to said
flexographic plate to form said first color image; and

said blanket cylinder receiving said first color image from said plate cylinder and transferring
said first color image to said impression cylinder for printing on said substrate.

55. (Twice Amended) Apparatus for creating a combined lithographic/ flexographic printing
process comprising:

a substrate;

a plurality of successive printing stations for depositing a series of images on a substrate in a continuous in-line process;

at least one of said successive printing stations being a flexographic station and comprising:

(1) a supply of liquid coating;

(2) a plate cylinder associated with a blanket cylinder, said plate cylinder having a flexographic plate thereon;

(3) an anilox roller associated with said liquid supply coating and said plate cylinder for delivering said liquid coating to said flexographic plate to form an image for transfer to said blanket cylinder;

(4) an impression cylinder for receiving said liquid coating image transferred from said blanket cylinder and printing said image on one side of said substrate; and

at least one offset lithographic printing station for receiving said substrate and printing on top of or on the opposite side to that previously printed.

56. Apparatus as in claim 55 wherein said liquid coating image printed on said substrate is a white color ink.

57. (Twice Amended) Apparatus as in claim 56 further including an air dryer associated with each impression cylinder on said flexographic station, said air dryer having sufficient air velocity for drying said liquid coating before the substrate is transferred to the successive printing station in said continuous in-line process.

58. (Twice Amended) Apparatus for a combined lithographic/flexographic printing process comprising:

a plurality of successive printing stations for depositing a series of images on a substrate in a continuous in-line process, said printing stations including, both lithographic and at least two flexographic printing stations;

a blanket cylinder at at least a first one of said flexographic printing stations;

flexographic ink-providing means for applying a flexographic ink to said blanket cylinder to form an image on one side of a substrate;

a substrate for receiving said flexographic ink image transferred from said blanket cylinder; and

at least one subsequent lithographic printing station in said in-line process for receiving said

image printed substrate and printing an additional colored ink image on said substrate on top of

said flexographic ink image or the opposite side to that previously printed using offset

lithography.

59. Apparatus as in claim 58 further comprising:

a plate cylinder at said at least first one of said flexographic stations;

a flexographic plate on said plate cylinder for receiving and transferring said flexographic ink to said blanket cylinder; and

said flexographic ink-providing means including a flexographic ink supply and an anilox roller

associated with said flexographic ink supply for transferring said flexographic ink to said

flexographic plate.

60. (Twice Amended) Apparatus for a combined lithographic/flexographic printing process for printing a multicolored image comprising:

a plurality of successive printing stations for depositing ink to form a series of images on a substrate in a continuous in-line process, said printing stations including both lithographic and flexographic printing stations;

at least one of said flexographic printing stations having:

(1) a plate cylinder and a blanket cylinder, said plate cylinder including a flexographic plate having an image thereon for transferring a flexographic color ink image to said blanket cylinder;

(2) an etched anilox roller for applying a flexographic color ink to said flexographic plate on said plate cylinder;

(3) an impression cylinder in ink-transfer relationship with said blanket cylinder for transferring said flexographic color ink image from said blanket cylinder to one side of said substrate; and

at least one of said succeeding printing stations being a lithographic printing station using offset lithography for printing additional colored ink images on top of said flexographic ink image or on the opposite side to that that previously printed.

61. Apparatus as in claim 60 wherein said additional colored ink images are formed with lithographic inks.

62. Apparatus as in claim 60 wherein at least one of said colored ink images is formed with a waterless ink.

63. Apparatus as in claim 60 further including an air dryer adjacent to said impression cylinder for drying the colored flexographic ink image transferred to said substrate before said additional colored ink images are printed thereon.

64. (Amended) Apparatus as in claim 60 further including halftone printing plates for printing said additional colored ink images.

65. Apparatus as in claim 60 wherein said colored flexographic ink image and said lithographic colored ink images are printed as solid colors and/or with halftone printing plates in sequence and in registry in said successive printing stations to produce said multicolored image on said substrate.

66. (Amended) Apparatus as in claim 60 wherein at least one of the successive printing stations is a sheet-fed press.

72. (Twice Amended) A method of combining lithography and flexographic printing in a continuous in-line process comprising the steps of:

providing a plurality of successive lithographic and flexographic printing stations for depositing a series of images on a substrate;

printing a flexographic ink image as one of said series of images on one side of said substrate at at least one of said flexographic stations;

transferring said printed substrate to at least one subsequent printing station in said continuous in-line process; and

printing an image on the reverse side of said substrate having said flexographic ink image, at at least one of said other subsequent lithographic printing stations with an offset lithographic process in the continuous in-line process.

67. Apparatus as in claim 60 wherein at least one of said flexographic printing stations prints said flexographic ink image with liquid vehicle slurry containing an encapsulated essence.

68. Apparatus as in claim 60 wherein at least one of said printing stations prints said flexographic ink image with a water-based liquid vehicle containing, suspended particles.

69. Apparatus as in claim 68 wherein said suspended particles are uniform in size.

70. Apparatus as in claim 68 wherein said suspended particles are nonuniform in size.

71. Apparatus as in claim 68 wherein said suspended particles are metallic particles.

72. A method of combining lithography and flexographic printing in a continuous in-line process

comprising the steps of:

providing a plurality of successive lithographic/ flexographic printing stations for depositing a series of images on a substrate;

printing an image as one of said thin controlled layers on one side of said substrate at at least one of said flexographic stations;

transferring said printed substrate to at least one subsequent printing station in said continuous in-line process; and
printing an image on the reverse side of said substrate having said flexographic ink image, at at least one of said other subsequent lithographic printing stations with an offset lithographic process in the continuous in-line process.

73. (Amended) A method as in claim 72 further comprising the step of drying said flexographic ink image on said substrate with an air dryer prior to printing [said] colored ink images thereon.

74. (Amended) A method as in claim 73 further including the step of printing a coating on top of said colored ink images at one of said plurality of subsequent printing stations.

75. (Amended) A method as in claim 73 wherein said colored ink images are formed from waterless colored inks.

76. (Amended) A method as in claim 75 wherein said waterless colored inks are in a solvent-based liquid vehicle.

77. (Amended) A method as in claim 72 further including the steps of:
printing a slurry on one side of said substrate at any of said flexographic printing stations in said continuous in-line process;
using an encapsulated essence in said slurry; and

printing an ink on the reverse side of said substrate at a subsequent printing station in said in-line process.

78. (Twice Amended) A method as in claim 77 further including the step of printing an aqueous-based coating over said slurry.

79. A method as in claim 77 further including the step of printing an ultraviolet coating over said slurry.

80. A method of combining offset lithography and flexographic printing in a continuous in-line process comprising the steps of:

providing a substrate;

applying an ink or coating to a blanket cylinder in a pattern with a coating head at a flexographic printing station;

transferring said pattern of ink or coating from said blanket cylinder to one side of the substrate;

and

printing a waterless ink pattern on the reverse side of said substrate at at least one subsequent offset lithographic printing station in said continuous in-line process.

81. A method of combining lithography and flexographic printing in a continuous in-line process comprising the steps of:

printing an aqueous-based vehicle having suspended particles therein on one side of a substrate at a flexographic printing station to form an image;

transferring said image printed substrate to at least one additional printing station in said continuous in-line process; and
printing additional images on the reverse side of said printed substrate in an offset lithographic process at said at least one additional printing station in said in-line process.

82. (Three times Amended) A method of combining lithography and flexographic printing in a continuous in-line process comprising the steps of:

(1) providing a plurality of successive printing stations for depositing a series of images on a substrate in said in-line continuous process;

(2) utilizing an anilox roller to transfer a liquid ink as one of said [thin controlled layers] series of images to a flexographic plate image at at least one of said printing stations;

(3) printing said liquid ink from said flexographic plate image to one side of said substrate;

(4) transferring said printed substrate with said liquid ink image to a subsequent printing station in said inline printing process;

(5) repeating steps (2)-(4) at subsequent printing stations in said in-line process to achieve a desired opacity ink image on the one side of said substrate; and

(6) printing an ink pattern on the reverse side of said substrate using an offset lithographic process.

83. A method as in claim 82 further including the step of additionally printing ink images over said liquid ink image on said substrate at subsequent ones of said printing stations in said in-line process.

84. A method as in claim 83 wherein said liquid ink is an opaque white color.

85. (Twice Amended) A method of combining offset lithography and flexography using a plurality of successive printing stations in a continuous in-line process, at least one of said stations comprising a flexographic printing station for printing an image on a substrate using a flexographic process:

(1) printing an image at one or more of said printing stations on said substrate using an offset lithographic process;

(2) transferring said image printed substrate to an additional and flexographic printing station and printing at said flexographic and additional printing station a coating on all or part of said image on said substrate;

(3) transferring said substrate to one or more additional printing stations for printing the reverse side of the said substrate; and

(4) printing an image on said reverse side of said substrate at one of said one or more printing stations using an offset lithographic process in the continuous inline process.

86. (Twice Amended) Apparatus for a combined offset lithographic and flexographic printing process comprising:

(1) a substrate;

(2) a plurality of successive printing stations for depositing a series of images selected from a group consisting of lithographic and flexographic inks, coatings and slurries on one or both sides of a substrate in a continuous in-line process;

(3) at least one of said stations comprising a flexographic printing station for printing an image on said substrate using a flexographic process; and

(4) at least one of said successive printing stations being an offset lithographic printing station whereby said offset lithographic printing station is used to deposit one image of said series of images on either side of the said substrate in the continuous in-line process.

87. (Twice Amended) Apparatus for a combined offset lithographic/flexographic printing process comprising:

a plurality of successive printing stations for printing images on a substrate in a continuous in-line process, said plurality of successive printing stations including at least one offset lithographic printing station and at least one flexographic printing station for depositing lithographic inks, and one or more flexographic inks, coatings and slurries on said substrate, whereby said lithographic inks, and said one or more flexographic inks, coatings and slurries may be printed successively on one or both sides of said substrate in the continuous in-line process.

88. The apparatus of Claim 15 wherein the flexographic ink-providing means is an anilox roller mounted in an auxiliary retractable coater unit.

89. (Amended) The apparatus of Claim 15 wherein a high-velocity air dryer is associated with the impression cylinder of said at least a first one of said flexographic printing stations.

90. The apparatus of claim 89 wherein the flexographic ink-providing means is an anilox roller mounted in an auxiliary retractable unit.

91. (Twice Amended) Method of combining offset lithographic and flexographic printing in a continuous in-line sheet-fed process, combining the steps of:

(a) providing a plurality of successive offset lithographic sheet-fed printing stations for printing images on cut paper sheets,

(b) providing one or more flexographic printing stations prior to at least one of said offset lithographic stations for printing a flexographic image on said cut paper sheets, each of said flexographic printing stations comprising,

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving a flexographic image on said blanket cylinder,

(2) an anilox roller for applying said flexographic image to said flexographic plate on said blanket cylinder, and

(3) an impression cylinder in image-transferring relationship with said blanket cylinder for transferring said flexographic image from said blanket cylinder to said cut paper sheets;

at least one of said succeeding printing stations being a lithographic printing station subsequent to said flexographic printing stations, and using offset lithography for printing additional images on top of said flexographic image on said cut paper sheets; and

(c) providing a high-velocity air dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic image printed on said cut paper sheets.

92. The method of Claim 91 wherein the printing of the flexographic image is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket.

93. (Amended) The method of Claim 91 wherein the printing of the flexographic image is accomplished by the anilox roller being mounted in a flexographic printing station.

94. (Twice Amended) Method of combining offset lithographic and flexographic printing in a continuous in-line sheet-fed process, combining the steps of:

(a) providing a plurality of successive offset lithographic sheet-fed printing stations for printing images on one or both sides of each of a succession of cut paper sheets;

(b) providing one or more flexographic stations prior to at least one of said offset lithographic stations for printing a flexographic image on one side of each of said cut paper sheets, each flexographic printing station comprising:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving a flexographic image on said blanket cylinder;

(2) an anilox roller for applying said flexographic image to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in image-transferring relationship with said blanket cylinder for transferring said flexographic image from said blanket cylinder to said cut paper sheets;

- (c) providing at least one succeeding printing station subsequent to said flexographic printing stations, and being a lithographic printing station using offset lithography for printing or or more images on the reverse side of the side on which said flexographic image was printed; and
- (d) providing a high velocity air dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic image printed on said cut paper sheets.

94. Method of combining offset lithographic and flexographic printing in a continuous in-line sheet-fed process, combining the steps of:

(a) providing a plurality of successive offset lithographic sheet-fed printing stations for printing images on one or both sides of each of a succession of cut paper sheets;

(b) providing one or more flexographic stations prior to at least one of said offset lithographic stations for printing a flexographic image on one side of each of said cut paper sheets, each flexographic printing station comprising:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for transferring a flexographic image to said blanket cylinder;

(2) an anilox roller for applying a flexographic image to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in image-transferring relationship with said blanket cylinder for transferring said flexographic image from said blanket cylinder to said substrate;

(c) providing at least one succeeding printing station subsequent to said flexographic printing stations, and being a lithographic printing station using offset lithography for printing or or more images on the reverse side of the side on which said flexographic image was printed; and

(d) providing a high velocity air dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic image printed on each sheet.

95. The method of Claim 94 wherein the printing of flexographic images is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket cylinder.

96. (Amended) The method of Claim 94 wherein the printing of flexographic images is accomplished by the anilox roller being mounted in a [dedicated] flexographic printing station.

97. (Twice Amended) Apparatus for a combined lithographic and flexographic printing process for printing a multicolored image on a succession of sheets comprising:

(a) a plurality of successive printing stations for printing an image on a succession of sheets in a continuous in-line process, said printing stations including both lithographic and one or more flexographic printing station;

(b) said flexographic printing stations having:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving a flexographic image on said blanket cylinder;

(2) an anilox roller for applying said flexographic image to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in an image-transfer relationship with said blanket cylinder for transferring said flexographic color image from said blanket cylinder to said succession of sheets;

at least one of said succeeding of printing stations being a lithographic printing stations subsequent to said flexographic printing stations, and using offset lithography for printing additional images on top of said flexographic image; and

(c) a high velocity air dryer associated with the impression cylinder of each flexographic printing stations for quickly drying the flexographic image printed on said succession of sheets.

98. The apparatus of Claim 97 wherein the printing of flexographic images is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket cylinder.

99. (Amended) The apparatus of Claim 97 where in the printing of flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

100. (Twice Amended) Apparatus for a combined lithographic and flexographic printing process for printing multicolored images on a succession of sheets, comprising:

(a) a plurality of successive printing stations for printing images on one or both sides of a succession of sheets in a continuous in-line process said printing stations including both lithographic and one or more flexographic printing stations;

(b) said one or more flexographic printing stations having;

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for [transferring] receiving a flexographic image on said cylinder;

(2) an anilox roller for applying said flexographic image to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in an image-transferring relationship with said blanket cylinder for transferring said flexographic image from said blanket cylinder to said succession of sheets;

(c) at least one of said succeeding printing stations being an offset lithographic printing station subsequent to said flexographic printing station, and using offset lithography for printing one or more additional images on the reverse side of the side on which said flexographic image was printed; and

(d) a high velocity air dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic image printed on said succession of sheets.

101. The apparatus of Claim 100 wherein the printing of flexographic images is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket cylinder.

102. (Amended) The apparatus of Claim 100 wherein the printing of flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

103. (Amended) Method of combining offset lithographic and flexographic printing in a single pass printing process, combining the steps of:

(a) providing a plurality of successive offset lithographic printing stations for printing images on a substrate,

(b) providing one or more flexographic printing stations prior to at least one of said offset lithographic printing stations for printing one or more flexographic images on said substrate, each of said flexographic printing stations comprising:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving the flexographic images on said blanket cylinder;

(2) an anilox roller for applying said flexographic image to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in image-transferring relationship with said blanket cylinder for transferring said flexographic images from said blanket cylinder to said substrate;
and

(c) providing a dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic images printed on said substrate.

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104. The method of Claim 103 wherein the printing process is continuous in-line.

105. The method of Claim 103 wherein the substrate comprises cut paper sheets.

106. The method of Claim 103 wherein the substrate comprises a continuous web.

107. The method of Claim 103 wherein the printing of the flexographic image is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket.

108. (Amended) The method of Claim 103 wherein the printing of the flexographic image is accomplished by the anilox roller being mounted in a flexographic printing station.

109. (Amended) Method of combining offset lithographic and flexographic printing in a continuous in-line printing process, combining the steps of:

(a) providing a plurality of successive offset lithographic sheet-fed printing stations for printing images on a substrate;

(b) providing one or more flexographic stations prior to at least one of said offset lithographic printing stations for printing one or more flexographic images on said substrate, each flexographic printing station comprising:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving said flexographic images on said blanket cylinder;

(2) an anilox roller for applying said flexographic images to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in image-transferring relationship with said blanket cylinder for transferring said flexographic images from said blanket cylinder to said substrate;

(c) after said flexographic printing, stations, one or more succeeding offset lithographic printing stations for printing one or more images on the reverse side of the side on which said flexographic images was printed; and

(d) providing a dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic images printed on said substrate.

110. The method of Claim 108 wherein the substrate comprises cut paper sheets.

111. The method of Claim 103 wherein the substrate comprises a continuous web.

112. The method of Claim 108 wherein the printing of one or more flexographic images is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket cylinder.

113. (Amended) The method of Claim 108 wherein the printing of one or more flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

114. (Amended) Apparatus for a combined offset lithographic and flexographic single pass printing process for printing one or more images on a substrate, comprising:

(a) a plurality of successive offset lithographic printing stations for printing lithographic images on a substrate;

(b) one or more flexographic printing stations prior to at least one of said offset lithographic printing stations for printing one or more flexographic images on said substrate, each of said flexographic printing stations having:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving said one or more flexographic images on said blanket cylinder;

(2) an anilox roller for applying said one or more flexographic images to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in an image-transfer relationship with said blanket cylinder for transferring said one or more flexographic images from said blanket cylinder to said substrate; and

(c) a dryer associated with the impression cylinder of each flexographic printing stations for quickly drying said one or more flexographic images printed on said substrate.

115. (Amended) The apparatus of Claim 114 wherein the printing process is continuous in-line.

116. (Amended) The apparatus of Claim 114 wherein the substrate comprises cut paper sheets.

117. (Amended) The apparatus of Claim 114 wherein the printing of one or more flexographic images is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket cylinder.

118. (Amended) The apparatus of Claim 112 where in the printing of flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

119. (Amended) Apparatus for a combined lithographic and flexographic continuous in-line printing process for printing one or more images on substrates comprising:

(a) a plurality of successive offset lithographic printing stations for printing images on said substrates;

(b) one or more flexographic printing stations prior to at least one of said offset lithographic printing stations for printing one or more flexographic images on said substrates, each of said flexographic printing stations having;

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon for receiving one or more flexographic images on said cylinder;

(2) an anilox roller for applying said flexographic images to said flexographic plate on said plate cylinder; and

(3) an impression cylinder in an image transferring relationship with said blanket cylinder for transferring said flexographic images from said blanket cylinder to said substrates;

(c) at least one of said succeeding printing stations being a lithographic printing station using offset lithographic for printing, one or more additional images on the reverse side of said substrates on which said flexographic image was printed; and

(d) dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic images printed on said substrates.

120. (Twice Amended) The apparatus of Claim [117] 119 wherein the printing process is intended for a succession of cut paper sheets that are fed by a sheet feeder.

121. (Amended) The apparatus of Claim 119 wherein said substrates are a continuous web.

122. The apparatus of Claim 119 wherein the printing of one or more flexographic images is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket cylinder.

123. (Amended) The apparatus of Claim 119 wherein the printing of one or more flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

124. (Amended) Method of combining offset lithographic and flexographic printing in a single pass printing process combining the steps of:

- (a) providing a plurality of offset lithographic printing stations for printing one or more images on a substrate;
- (b) providing one or more flexographic printing stations prior to at least one of said plurality of offset lithographic printing stations for printing one or more flexographic images on said substrate; and
- (c) providing a dryer associated with said one or more flexographic printing stations for drying said flexographic images printed on said substrate.

125. (Amended) Method of combining offset lithographic and flexographic printing in a continuous in-line printing process, combining the steps of:

- (a) providing a plurality of offset lithographic printing stations for printing one or more images on a substrate;
- (b) providing one or more flexographic printing stations prior to at least one of said plurality of offset lithographic printing stations for printing one or more flexographic images on said substrate;
- (c) after said one or more flexographic printing stations, providing one or more succeeding printing offset lithographic printing stations for printing one or more images on the reverse side of the side on which said flexographic images were printed; and
- (d) providing a dryer associated with said one or more flexographic printing stations for drying the flexographic images printed on said substrate.

126. The method of Claim 124 wherein the printing process is continuous in-line.

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136. The method of Claim 13 5 wherein the flexographic images are printed using a white color opaque ink.

137. (Amended) The method of Claim 124 or 125 wherein the flexographic images are printed with a liquid vehicle slurry containing an encapsulated essence.

138. The apparatus for a combined offset lithographic and flexographic single pass printing process for printing one or more images on a substrate, comprising:

(a) a plurality of successive offset lithographic printing stations for printing images on a substrate;

(b) one or more flexographic printing stations prior to at least one of said offset lithographic printing stations for printing one or more flexographic images on said substrate; and

(c) a dryer associated with each flexographic printing station for drying said flexographic images printed on said substrate.

139. Apparatus for a combined offset lithographic and flexographic continuous in-line printing process, comprising:

(a) a plurality of offset lithographic printing stations for printing one or more images on a substrate;

(b) one or more flexographic printing stations prior to at least one of said offset lithographic printing stations for printing, one or more flexographic images on said substrate;

(c) one or more succeeding offset lithographic printing stations after said flexographic printing stations for printing one or more images on the reverse side of the side on which said flexographic images were printed; and

(d) a dryer associated with each flexographic printing, stations for drying the flexographic images printed on said substrate.

140. The apparatus of Claim 138 wherein the printing process is continuous in-line.

141. (Amended) The apparatus of Claim 138 or 139 wherein the printing stations are for cut paper sheets.

142. (Amended) The apparatus of Claim 138 or 139 wherein the printing stations are for a continuous web.

143. The apparatus of Claims 138 or 139 wherein the printing of the flexographic image is accomplished by an anilox roller being mounted in an auxiliary retractable coater unit.

144. (Amended) The apparatus of Claim 138 or 139 wherein the printing of the flexographic image is accomplished by an anilox roller being mounted in a flexographic printing station.

145. The apparatus of Claim 138 or 139 wherein the flexographic images are printed using a water based liquid vehicle containing suspended particles.

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146. The apparatus of Claim 145 wherein said suspended particles are uniform in size.

147. The apparatus of Claim 145 wherein said suspended particles are nonuniform in size.

148. The apparatus of Claim 145 wherein said suspended particles are metallic particles.

149. The apparatus of Claim 138 or 139 wherein the flexographic images are printed using an opaque color ink.

150. The apparatus of Claim 149 wherein the flexographic images are printed using a white color opaque ink.

151. (Amended) The apparatus of Claim 138 or 139 wherein the flexographic images are printed with a liquid vehicle spin containing an encapsulated essence.

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